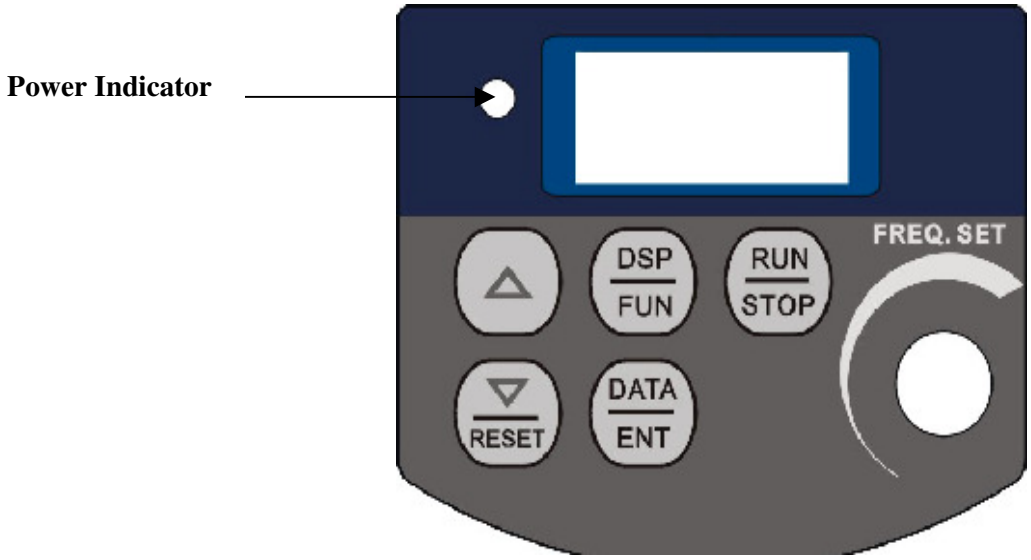
Quick Start Guide

This guide is to assist in installing and running the inverter to verify that the drive and motor are working properly. Starting, stopping and speed control will be from the keypad. If your application requires external control or special system programming, consult the 7300EV Instruction Manual supplied with your inverter.

Step 1 Before starting the inverter

Please refer to chapter one (Notice for wiring) of the 7300EV Instruction Manual. If you feel this was abnormal, do not start the drive until qualified personnel have corrected the situation. (Failure to do so could result in serious injury.)

- **Check inverter and motor nameplates to determine that they have the same HP and voltage ratings. (Ensure that full load motor amps do not exceed that of the inverter.)**
- **Remove the terminal cover to expose the motor and power terminals.**
  - **a. Verify that AC power is wired to L1(L), L2, and L3(N) .**
  - **b. Verify that Motor leads are connected to T1, T2, and T3 .**
  - **c. IF brake module is necessary, please connect terminal voltage of the braking unit to + and - of the inverter.**



Step2 Apply power to the drive.

Apply AC power to the drive and observe operator. Three 7-segment display should show power voltage for 3~5 seconds and then show Frequency Command, factory sets 5.00. (Frequency Command of 7-segment display should be flashed all the time.)

Step3 Check motor rotation without load.

- **Press RUN Key. 7-segment Display will indicates 00.0to 05.0. Such value is the frequency output value.**
- **Check the operation direction of the motor.**
  IF the direction of the motor is incorrect:
  Press STOP Key, turn off the AC power supply. After Power indicator LED is off, change over theT1 and T2.
  Supply the power again, then check the motor direction.
- **Press STOP key.**

Step4 Check full speed at 50Hz/60Hz

- **Change the frequency with ⮝,⮟ arrow mark , please press DATA/ENTER after setting frequency.**
- **Set frequency to 50Hz/60Hz according to the above regulations.**
- **Press RUN Key, inspect the motor operation as motor accelerates to full load.**
- **Press STOP Key, inspect the motor operation as motor deceleration.**

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Chapter 1 Notice for wiring

1.1 Fuse types

Drive input fuses are provided to disconnect the drive from power in the event that a component fails in the drive's power circuitry. The drive's electronic protection circuitry is designed to clear drive output short circuits and ground faults without blowing the drive input fuses. Below table shows the EV input fuse ratings.

To protect the inverter most effectively, use fuses with current-limit function.

RK5, CC/T type fuse for EV

110V class(1 φ)

JNEV-	HP	KW	KVA	100% CONT Output AMPS (A)	Max.RK5 FUSE Rating(A)	Max.CC or T FUSE Rating(A)
1P2-H1	0.25	0.2	0.53	1.7	10	20
1P5-H1	0.5	0.4	0.88	3.1	15	30
101-H1	1	0.75	1.6	4.2	20	40

220V class(1 φ)

JNEV-	HP	KW	KVA	100% CONT Output AMPS (A)	Max.RK5 FUSE Rating(A)	Max.CC or T FUSE Rating(A)
2P2-H1	0.25	0.2	0.53	1.7	8	15
2P5-H1	0.5	0.4	0.88	3.1	10	20
201-H1	1	0.75	1.6	4.2	15	30
202-H1	2	1.5	2.9	7.5	20	40
203-H1	3	2.2	4.0	10.5	25	50

220V class(3 φ)

JNEV-	HP	KW	KVA	100% CONT Output AMPS (A)	Max.RK5 FUSE Rating(A)	Max.CC or T FUSE Rating(A)
2P2-H3	0.25	0.2	0.53	1.7	5	8
2P5-H3	0.5	0.4	0.88	3.1	8	10
201-H3	1	0.75	1.6	4.2	12	15
202-H3	2	1.5	2.9	7.5	15	20
203-H3	3	2.2	4.0	10.5	20	30

440V class(3 φ)

JNEV-	HP	KW	KVA	100% CONT Output AMPS (A)	Max.RK5 FUSE Rating(A)	Max.CC or T FUSE Rating(A)
401-H3	1	0.75	1.7	2.3	6	10
402-H3	2	1.5	2.9	3.8	10	15
403-H3	3	2.2	4.0	5.2	10	20

*Fuse ratings are based upon 300V fuses for 120V inverters, and 300V fuses for 230V inverters, and 500V for 460V inverters

1.2 Precautions for peripheral applications:

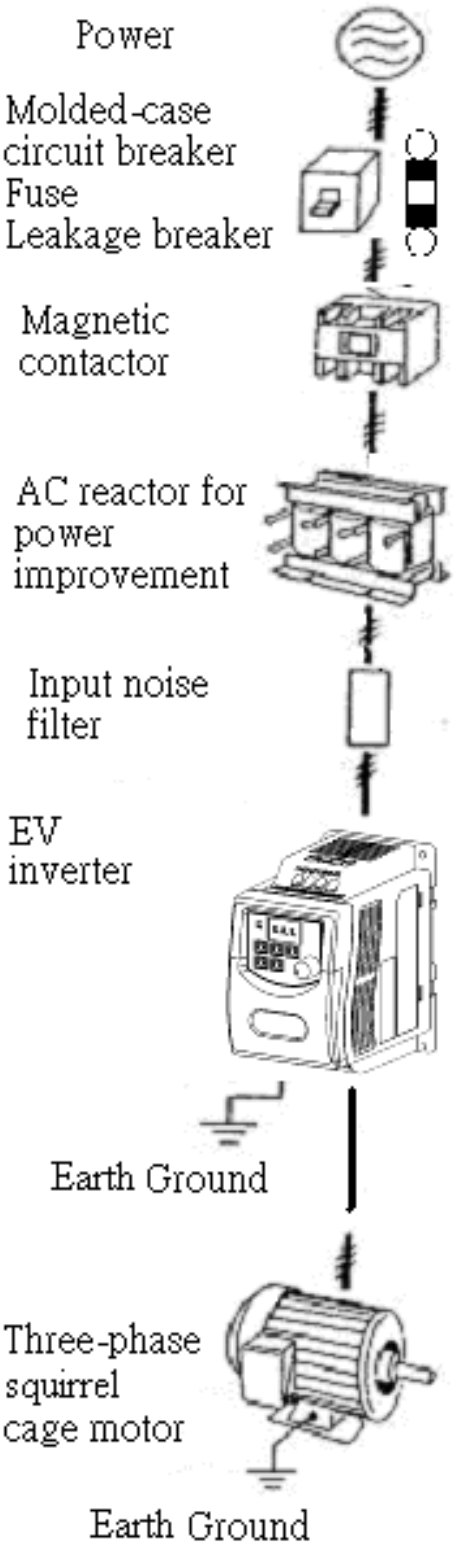


Figure 1-1 Typical installation schematic

Power supply:

●Make sure the correct voltage is applied to avoid damaging the inverter.

●A molded-case circuit breaker or fused disconnect must be installed between the AC source and the inverter.

Molded-case circuit breaker:

●Use a molded-case circuit breaker that conforms to the rated voltage and current of the inverter to control the power and protect the inverter.

●Do not use the circuit breaker as the run/stop switch for the inverter.

Fuse:

●A suitable fuse should be installed with inverter rated voltage and current when a MCCB is not being used.

Earth Leakage circuit breaker:

● Install a leakage breaker to prevent problems caused by current leakage and to protect personnel. Select current range up to 200mA, and action time up to 0.1 second to prevent high frequency failure.

Magnetic contactor:

●Normal operations do not need a magnetic contactor. When performing functions such as external control and auto restart after power failure, or when using a brake controller, install a magnetic contactor.

●Do not use the magnetic contactor as the run/stop switch for the inverter.

AC Line Reactor for power quality:

●When inverters are supplied with high capacity (above 600KVA) power source, a AC reactor can be connected to improve the PF.

Input noise filter:

●A filter must be installed when there are inductive loads affecting the inverter.

Inverter:

●Output terminals T1, T2, and T3 are connected to U, V, and W terminals of the motor. If the motor is reversed while the inverter is set to run forward, just swap any two terminals of T1, T2, and T3.

●To avoid damaging the inverter, do not connect the input terminals T1, T2, and T3 to AC input power.

●Connect the ground terminal properly.(230 V series: Rg <100Ω; 460 V series: Rg <10Ω.)

1.3EV Wiring diagram

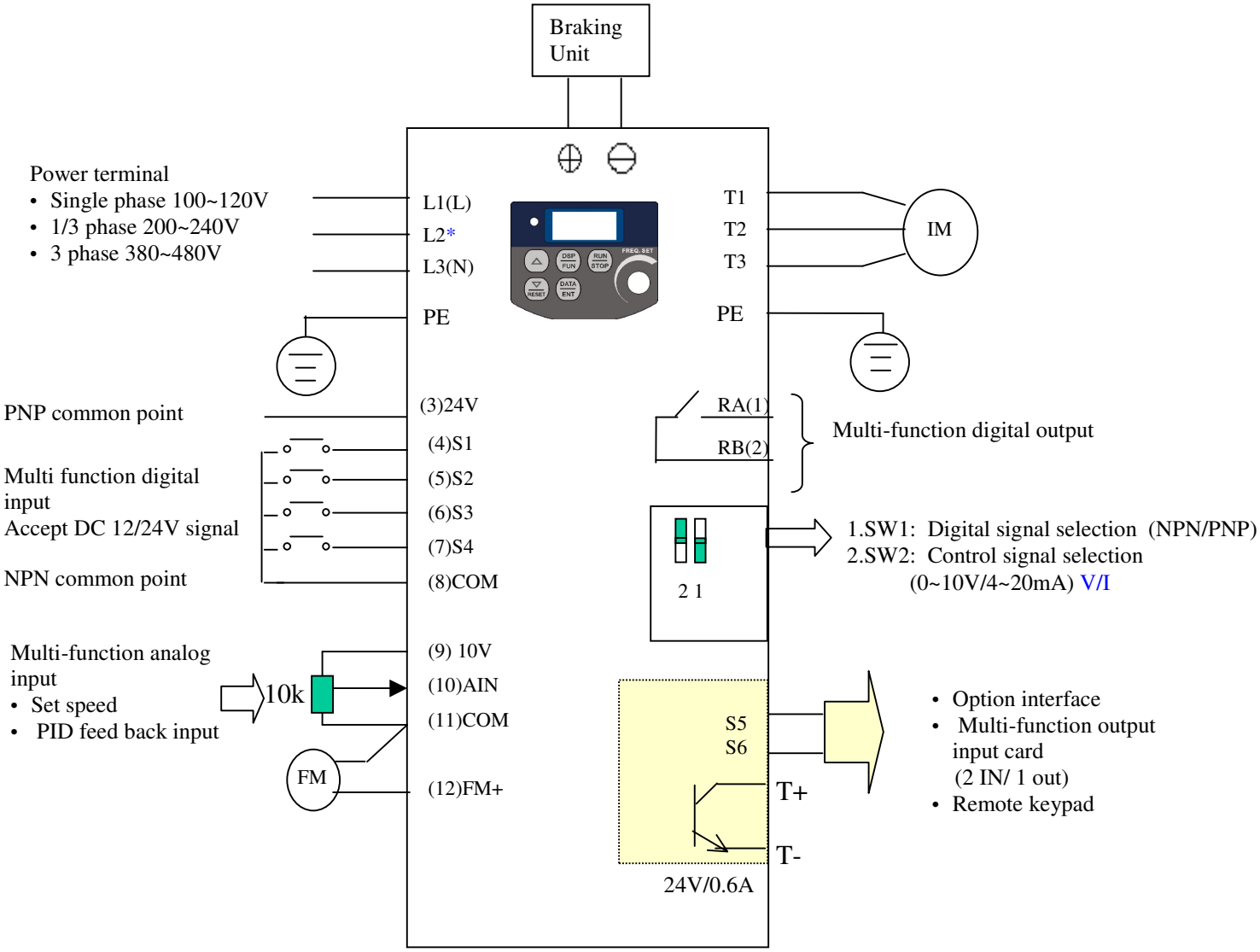


Figure 1-2 Wiring diagram

Note 1:- Connect inputs to
Terminal 3 (internal 24vdc) for PNP mode (Positive switching) .
Or to terminal 8 (Common) for NPN mode(Negative switching) .

Note2:- External 24 Vdc may be used to supply the external contacts at each input
(Connect the 0V of the external supply to Common (terminal 8).)

1.4 Description of Inverter Terminal

Descriptions of power terminals

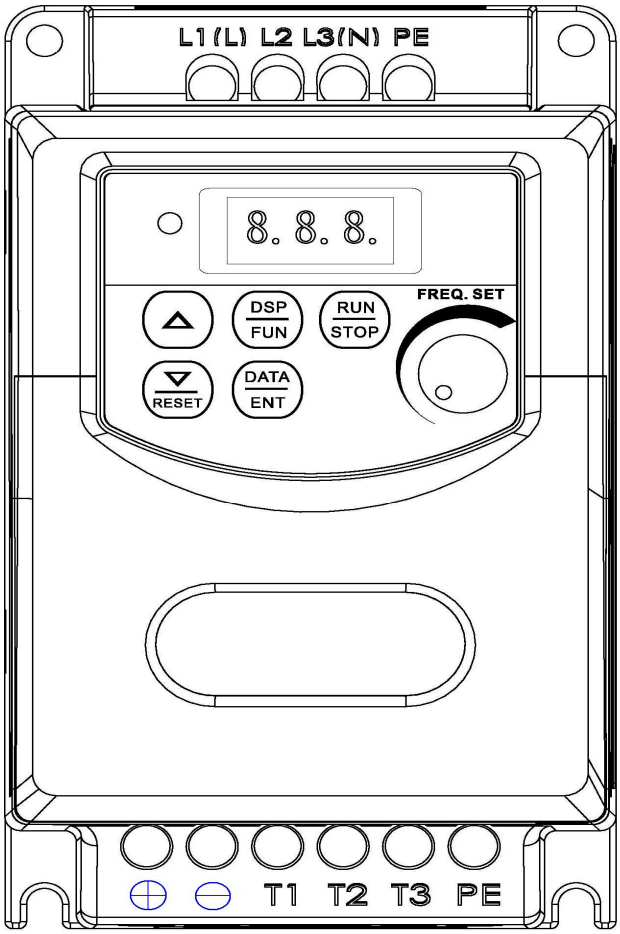


Figure 1-3 Power terminals locations

Symbol	Description
L1 (L)	Main power input Single-phase: L/N* Three-phase: L1/L2/L3
L2	
L3 (N)	
⊕	DC power and braking unit connection terminals. (match with braking units and braking resistor to brake)
⊖	
T1	Inverter output
T2	
T3	
PE	Grounding terminals (2 points)

* Braking units are required for applications where a load with high inertia needs to be stopped rapidly. Use a power-matched braking unit and resistor to dissipate the energy generated by the load while stopping. Otherwise inverter will trip on over voltage.

***** Terminal at L2 will be non-functional for single-phase units.

Control signal terminals block description

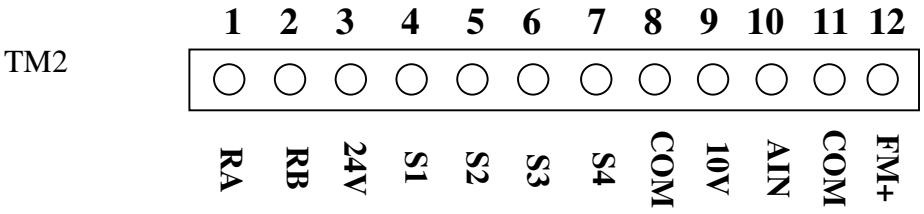
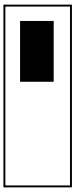
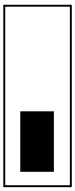


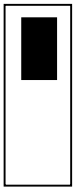
Figure 1-4 Signal terminal locations

Symbol	Description	
RA	Multi-functional output terminal Normally open contact	Rated contact capacity: (250VAC/10A) Contact description: (refer to parameter F21)
RB		
10V	Supply for external potentiometer for speed reference.	
AIN	Analog frequency signal input terminal or multi-function input terminal S7 (high level : 8V/low level: 2V), adaptable to PNP (refer to parameter F15 description)	
24V	PNP (SOURCE) input, S1~S4 (S5/S6/S7) common terminal, (set SW1 to PNP and connect option card power.)	
COM	NPN (SINK) input, S1~S4 (S5/S6) common terminal, (set SW1 to NPN, and analog input, connect option card power, output signal common terminal.)	
FM+	Multi-function analog output + terminal (refer to parameter F26description), output signal: DC 0-10V.	

Symbol	Description
S1	Multi-function input terminals (refer to parameters F11~F14 description)
S2	
S3	
S4	

SW function description

SW1	Type of external signal	Remarks
	NPN input (SINK)	
	PNP input (SOURCE)	Factory default

SW2	Type of external signal	Remarks
	0~10V DC analog signal	Effective when parameter F05=2 (analog input signal from TM2)
	4~20mA analog signal	

1.5 Dimension

(1) IP20 Frame1: Single phase: JNEV-1P2~201-H1/H1F
Three phase: JNEV-2P2~201-H3

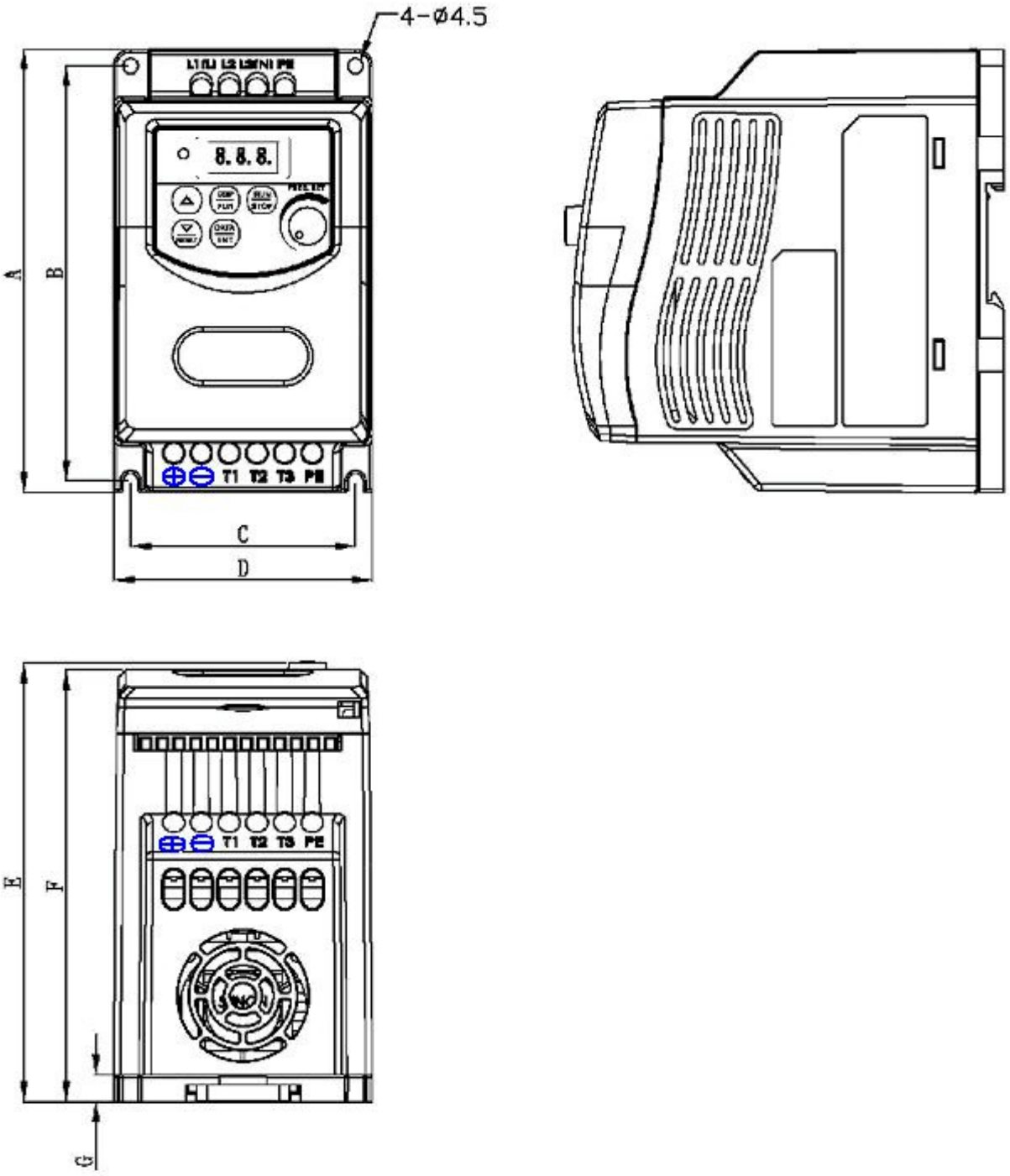


Figure 1-5 EV Drive frame1 Dimensions

(2) IP20 Frame2: Single phaseJNEV-202~203-H1/H1F
Three phase JNEV-202~203-H3
Three phase JNEV-401~403-H3/H3F

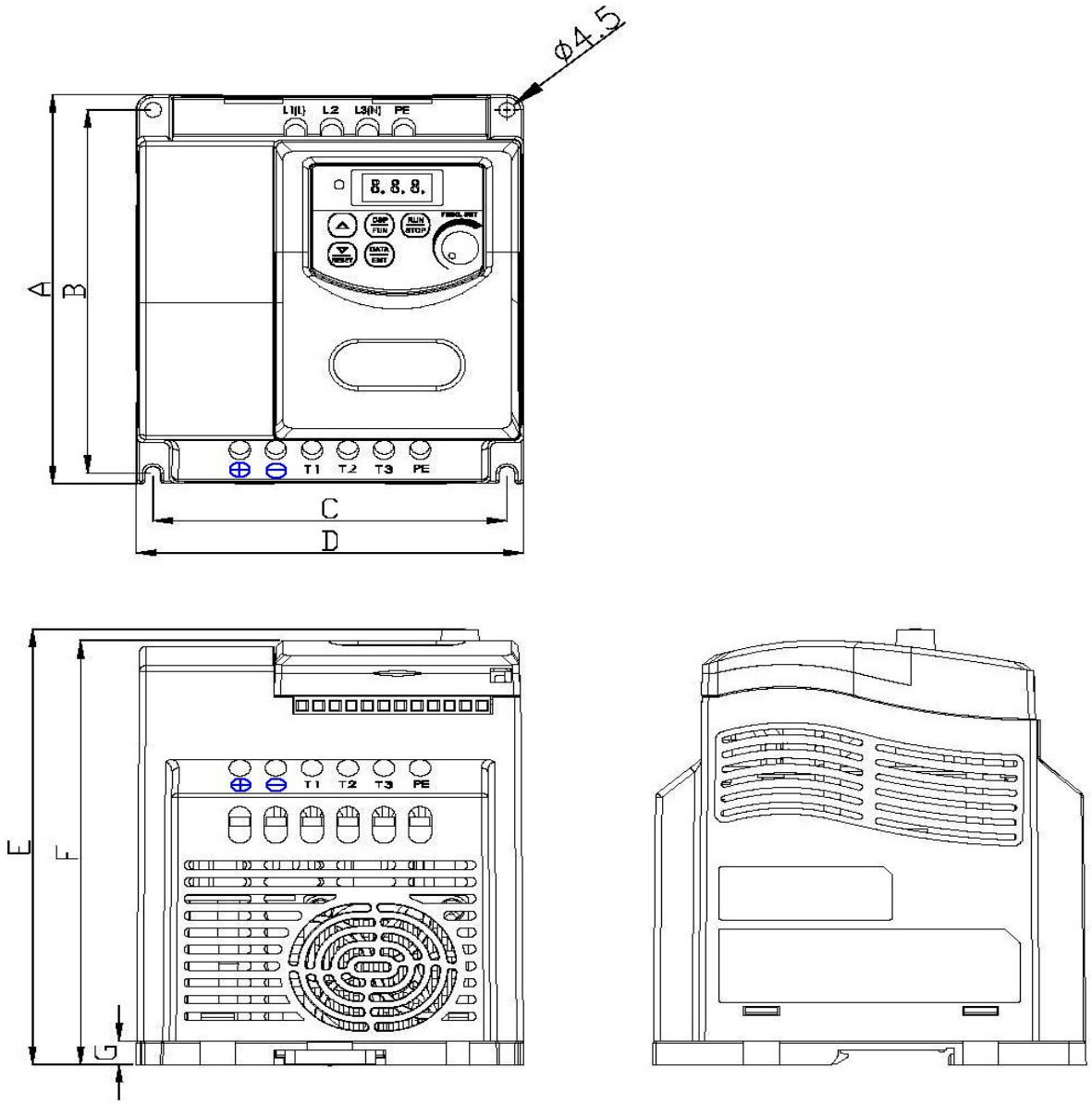


Figure 1-6 EV Drive frame2 Dimensions

Unit: inch/mm

MODEL / LENGTH	A	B	C	D
Frame 1	5.2/132	4.86/123.5	2.64/67	3.03/77
Frame 2	5.2/132	4.86/123.5	4.25/108	4.65/118
MODEL / LENGTH	**E**	**F**	**G**	
Frame 1	5.13/130.5	5.06/128.45	0.315/8	
Frame 2	5.83/148	5.67/144	0.315/8	

(3) **IP65 Frame1(switch)** EV-1P2/1P5/101/2P2/2P5/201-N4S(IP65 type)：

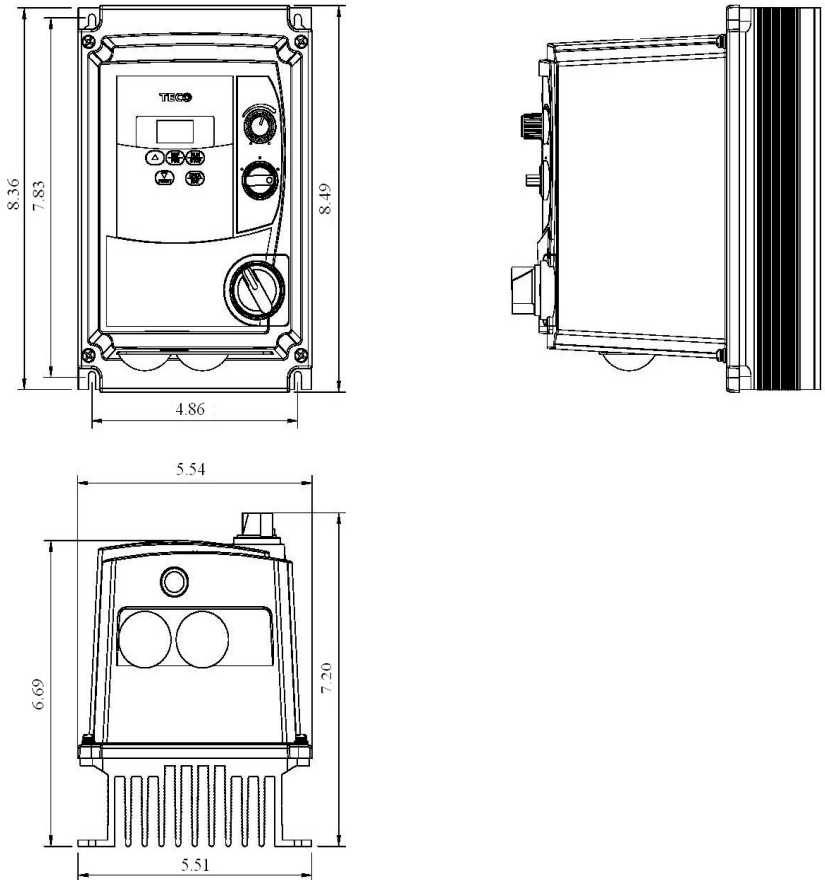


Figure 1-7 EV Drive IP65 (switch) Frame 1 dimensions

- **IP65 Frame1(no switch)** EV-1P2/1P5/101/2P2/2P5/201-N4(IP65 type)：

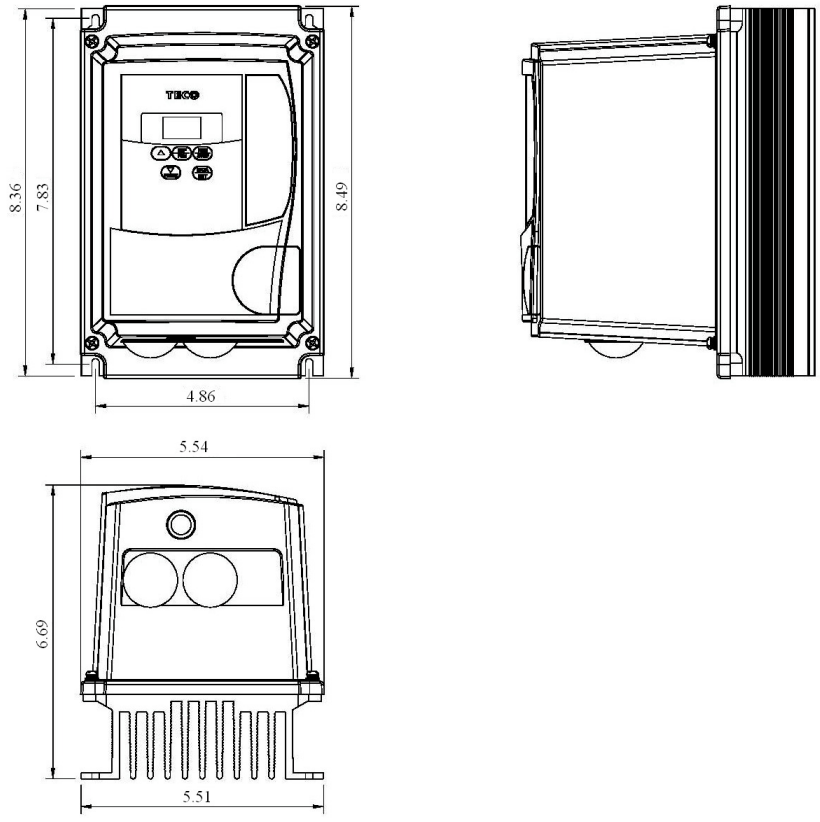


Figure 1-8 EV Drive IP65 (no switch) Frame 1 dimensions

Chapter 2 Programming instructions & Parameter list

2.1 Operation Instruction of the keypad

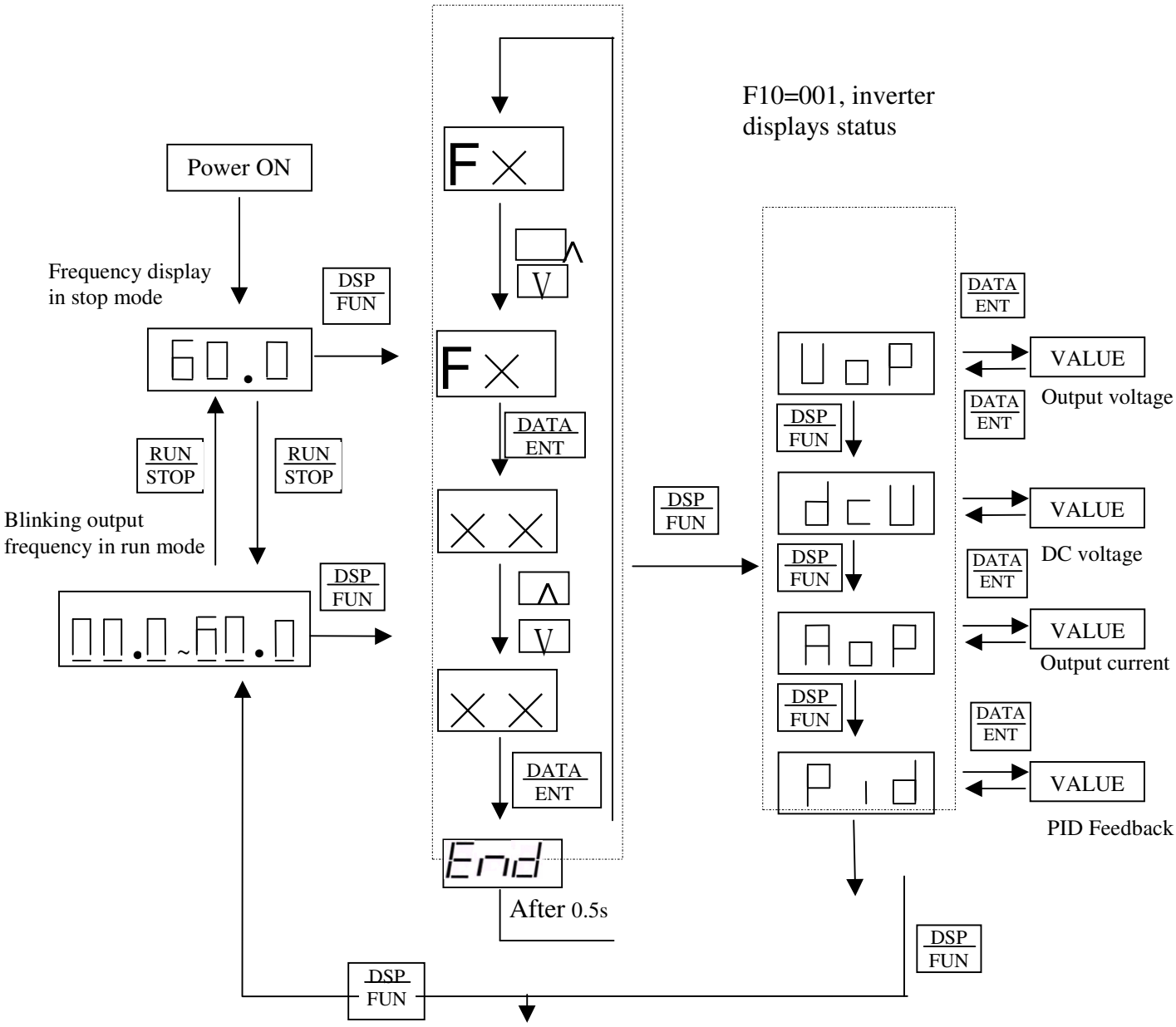


Figure 2-1 Keypad Operations Sequence

*1: Display flashes with set frequency in stop mode, but it is solid in run mode.
*2: The frequency can be set during both stop and run modes.

- Remote/Local change function
  - Local mode
    - ●Run command via RUN/STOP key on the keypad
    - ●Frequency command

      When C41=000: only UP/DOWN key on the keypad can control and F05 setting has no effect.

      When C41=001: only VR on the keypad can control and F05 setting has no effect.
  - Remote mode
    - ●Run command from Run parameter (F04) control setting
    - ●Frequency command from Frequency parameter (F05) control setting

•Remote/Local change mode on keypad is achieved by simultaneously pressing ▼/RESET and

DATA/ENT. Each successive operation toggles between local and remote.
Note: The inverter must be stopped.

2.2 Parameter function list

Basic parameter function list

F	Function Description	Range/ Code	Factory Default	Remarks
00	Inverter horse power capacity			
01	Acceleration time 1	00.1~999s	05.0	*1 *2
02	Deceleration time 1	00.1~999s	05.0	*1 *2
03	Motor rotation direction	000: Forward 001: Reverse	000	*1
04	Run command source	000: keypad 001: External Terminal 002: Communication Control	000	
05	Frequency command source	000: UP/Down Key on control panel 001: Potentiometer on control panel 002: AIN input signal from (TM2) 003: Multi-function input terminal UP/DOWN function 004: RS-485 Communication frequency setting	000	
06	External control operation mode	000: Forward/ Stop-Reverse/Stop 001: Run/ Stop-Forward/Reverse 002:3-wire—Run/ Stop	000	
07	Frequency upper limit	01.0 ~200Hz	50.0/60.0	*2
08	Frequency lower limit	00.0 ~200Hz	00.0	*2
09	Stopping method	000: Decelerate to stop 001: Coast to stop	000	
10	Status display parameters	000: No display 001: Display	000	*1
11	Terminal S1 Function	000: Forward 001: Reverse 002: Preset Speed Command 1 003: Preset Speed Command 2 004: Preset Speed Command 3 005: Jog frequency Command 006: Emergency stop(E.S.) 007: Base Block (b.b.) 008: Select 2nd accel / decel time 009: Reset 010: Up command 011: Down command 012: Control signal switch 013: Communication control signal switch 014: Acceleration/deceleration prohibit 015: Master/Auxiliary speed source select 016: PID function disable 017: Analog frequency signal input(terminal AIN) 018: PID feedback signal (terminal AIN) 019: DC Brake signal	000	
12	Terminal S2 Function		001	
13	Terminal S3 Function		005	
14	Terminal S4 Function		006	
15	Terminal AIN Function		017	
16	AIN signal select	000: 0~10V(0~20mA) 001: 4~20mA(2~10V)	000	
17	AIN Gain (%)	000~200	100	*1

18	AIN Bias (%)	000~100	000	*1
19	AIN Bias	000: Positive 001: Negative	000	*1
20	AIN Slope Direction	000: Positive 001: Negative	000	*1
21	Multi-function output RY1	000: Run 001: Frequency reached (Set frequency ± F23) 002: Frequency is within the range set by (F22±F23) 003: Frequency Detection (>F22) 004: Frequency Detection (<F22) 005: Fault terminal 006: Auto reset and restart 007: Momentary power loss 008: Emergency Stop(E.S.) 009: Base Block (b.b.) 010: Motor overload protection 011: Inverter overload protection 012: retain 013: Power On 014: Communication error 015: Output current detection(>F26)	000	
22	Output frequency at the Set value (Hz)	00.0~200	00.0	*1
23	Frequency detection range (±Hz)	00.0~30.0	00.0	*1
24	Output current set value	000~100%	000	
25	Output current detection time	00.0~25.5(Sec)	00.0	
26	Multi-function output analog type selection (0~10Vdc)	000: Output frequency 001: Set frequency 002: Output voltage 003: DC voltage 004: Output current 005: PID feedback signal	000	*1
27	Multi-function analog output gain (%)	000~200%	100	*1
28	Preset frequency 1 (Main frequency setting)	00.0~200Hz	05.0	*1
29	Preset frequency 2	00.0~200Hz	05.0	*1
30	Preset frequency 3	00.0~200Hz	10.0	*1
31	Preset frequency 4	00.0~200Hz	20.0	*1
32	Preset frequency 5	00.0~200Hz	30.0	*1
33	Preset frequency 6	00.0~200Hz	40.0	*1
34	Preset frequency 7	00.0~200Hz	50.0	*1
35	Preset frequency 8	00.0~200Hz	60.0	*1
36	Jog frequency instruction	00.0~200Hz	05.0	*1
37	DC braking time	00.0~25.5 Sec	00.5	
38	DC braking start frequency	01.0~10.0 Hz	01.5	

39	DC braking level	000~020%	005	
40	Carrier frequency	004~016	010	4~16K
41	Auto Restart for power-loss	000: Enable 001: Disable	000	
42	Auto-restart times	000~005	000	
43	Motor rated current			*4
44	Motor rated voltage			*4
45	Motor rated frequency			*4
46	Motor rated power			*4
47	Motor rated speed			*4
48	Torque Boost Gain (Vector)	001~450		
49	Slip Compensation Gain (Vector)	001~450		
50	Low frequency voltage compensation	000~40		
51	Advanced parameter function display	000: don't display 001: display	000	*1
52	Factory default	010: Reset to factory default (50Hz) 020: Reset to factory default (60Hz)	000	
53	Software version	CPU Version		*3 *4
54	Latest 3 fault records			*3 *4

Advanced function parameter list**(Enable access to these parameters by setting F51=001)**

C	Function Description	Range/ Code	Factory default	Remarks
00	Reverse run instruction	000: Reverse enable 001: Reverse disable	000	
01	Acceleration stall-prevention	000: Acceleration stall prevention enable 001: Acceleration stall prevention disable	000	
02	Acceleration stall-prevention level (%)	050 - 200	200	
03	Deceleration stall-prevention	000: Deceleration stall prevention enable 001: Deceleration stall prevention disable	000	
04	Deceleration stall-prevention level (%)	050 - 200	200	
05	Run stall-prevention	000: Run stall prevention available 001: Run stall prevention unavailable	000	
06	Run stall-prevention level (%)	050 - 200	200	
07	Stall prevention time during run	000: according to decel time set in F02 001: according to decel time set in C08	000	
08	Stall prevention deceleration time set	00.1 – 999 Sec	03.0	
09	Direct start on power up	000: Direct start available 001: Direct start disabled	001	
10	Reset mode	000: RUN instruction is OFF, Reset command is available. 001: Whether RUN instruction is OFF or ON, Reset command is available.	000	

11	Acceleration time 2	00.1~999 Sec	05.0	*1 *2
12	Deceleration time 2	00.1~999 Sec	05.0	*1 *2
13	Fan control	000: Auto-run at set temperature 001: Run when inverter runs 002: Always run 003: Always stop	001	This function only available for IP20 type, For IP65 type , fan will run while power is on.
14	Control mode	000:Vector control 001:V/F Control	000	*4
15	V/F Pattern setting	001 ~ 007	001/004	
16	V/F base output voltage set	198~265V / 380~530V	220/440	
17	Max output frequency (Hz)	00.2 – 200	50.0/60.0	
18	Output voltage ratio at max frequency (%)	00.0 – 100	100	
19	Mid frequency(Hz)	00.1 – 200	25.0/30.0	
20	Output voltage ratio at mid frequency (%)	00.0 – 100	50.0	
21	Min output frequency (Hz)	00.1 – 200	00.5/00.6	
22	Output voltage ratio at Min frequency (%)	00.0 – 100	01.0	
23	Torque Boost Gain (V/F)	00.0 ~ 30.0%	00.0	*1
24	Slip Compensation Gain (V/F)	00.0 ~100%	00.0	*1
25	Motor no load current			Varies with motor rating *4
26	Electronic thermal relay protection for motor (OL1)	000: Enable motor protection 001: Disable motor protection	000	
27	Skip frequency 1(Hz)	00.0~200	00.0	*1
28	Skip frequency 2(Hz)	00.0~200	00.0	*1
29	Skip frequency range (±Hz)	00.0~30.0	00.0	*1
30	PID operation mode	000: PID Function unavailable 001: PID control, Bias D control 002: PID Control, Feedback D control 003: PID Control, Bias D reverse characteristics control. 004: PID Control, Feedback D reverse characteristics control.	000	
31	PID Error gain	0.00 – 10.0	1.00	*1
32	P: Proportional gain	0.00 – 10.0	01.0	*1

33	I: Integral time (s)	00.0 – 100	10.0	*1
34	D: Differential time (s)	0.00 – 10.0	0.00	*1
35	PID OFFSET	000: Positive direction 001: Negative direction	000	*1
36	PID OFFSET adjust (%)	000 – 109	000	*1
37	PID Update time (s)	00.0 - 02.5	00.0	*1
38	PID Sleep mode threshold	00.0~200Hz	00.0	
39	PID Sleep delay time	00.0~25.5	00.0	
40	Frequency Up/ Down control using MFIT	000: UP/Down command is available. Set frequency is held when inverter stops. 001: UP/Down command is available. Set frequency resets to 0Hz when inverter stops. 002: UP/Down command is available. Set frequency is held when inverter stops. Up/Down is available in stop.	000	
41	Local/Remote frequency control select (Run command by the Run/Stop key)	000: UP/Down key on keypad sets frequency 001: Potentiometer on the keypad set frequency	000	
42	Terminal S5 function (option)	000: Forward 001: Reverse 002: Preset Speed Command 1 003: Preset Speed Command 2 004: Preset Speed Command 3 005: Jog Frequency Command 006: Emergency Stop(E.S.) 007: Base Block (b.b.) 008: Select 2nd accel/decel time. 009: Reset 010: Up Command 011: Down Command 012: Control signal switch 013: Communication control signal switch 014: Acceleration/ deceleration disable 015: Master/auxiliary speed source select 016: PID function disable 017: Analog frequency signal input(terminal AIN) 018: PID feedback signal (terminal AIN) 019: DC Brake signal	007	
43	Terminal S6 function (option)		009	
44	Multi-function input terminal S1~S6 signal scan time (mSec ×8)	001~100	010	
45	Confirming AIN signal scan time (mSec x 8)	001~100	050	

46	Multi-function output T+, T- (option)	000: Run 001: Frequency reached (Set frequency ± F23) 002: Frequency is within the range set by (F22±F23) 003: Frequency detection (>F22) 004: Frequency detection (<F22) 005: Fault terminal 006: Auto-restart 007: Momentary power loss 008: Emergency Stop(E.S.) 009: Base Block(b.b.) 010: Motor overload protection 011: Inverter overload protection 012: retain 013: Power ON 014: Communication error 015: Output current detection(>F26)	005	
47	Remote keypad control selection	000: Disable (no signal loss detection) 001: Enable. On signal loss Stop according to F09 002: Enable. Runs at the last set frequency. On signal loss Stop is according to F04 setting or Stop key on keypad.	000	Stop inverter then connect remote keypad for proper operation *4
48	Copy module	000: Copy module disable 001: copy to module from inverter 002: copy to inverter from module 003: read/ write check	000	*3
49	Inverter communication address	001 ~ 254	001	*3 *4
50	Baud rate (bps)	000: 4800 001: 9600 002: 9200 003: 38400	003	*3 *4
51	Stop bit	000: 1 Stop bit 001: 2 Stop bit	000	*3 *4
52	Parity bit	000: No parity 001: Even parity 002: Odd parity	000	*3 *4
53	Data bits	000: 8 bits data 001: 7 bits data	000	*3 *4
54	Communication error detection time	00.0 ~ 25.5 Sec	00.0	*3*5
55	Communication error operation selection	000: Deceleration to stop. (F02: Deceleration time 1). 001: Coast to stop. 002: Deceleration to stop. (C12: Deceleration time 2). 003: continue operating.	000	*3*5

Note: *1: Can be modified in Run mode.

***2: Frequency resolution is 1Hz for settings above 100 Hz.**

***3: Cannot be modified during communication.**

***4: Do not change while making factory setting.**

F52 factory setting is 020(60HZ) and motor parameter value is 170.

F52 factory setting is 010(50HZ) and motor parameter value is 140.

***5: Available in Software version 1.2 or later**

Chapter 3 Troubleshooting and maintenance

3.1 Trouble indication and corrective action

3.1.1 Fault/ Error display and Diagnostics

1. Un- reset able / un recoverable Errors

Display	Error	Cause	Corrective Action
EPR @	EEPROM problem	EEPROM problem	Change EEPROM
OV	Over voltage during stop	Voltage Detection circuit malfunction	Repair or replace unit
@ LV	Under voltage during stop	1. Power voltage too low 2. Restraining resistor or fuse burnt out. 3. Detection circuit malfunctions	1. Check if the power voltage is correct or not 2. Replace the restraining resistor or the fuse 3. repair or replace unit
@ OH	The inverter is overheated during stop	1. Thermal Detection circuit malfunction 2. Ambient temperature too high or bad ventilation	1. Repair or replace unit 2. Improve ventilation conditions or relocate inverter
CTR	Current transducer detection error	Current transducer or circuit error.	Repair or replace unit

Note: "@" the Failure contact does not operate.

2. Errors which can be recovered both manually and automatically

Display	Error	Cause	Corrective Action
OCS	Over current at start	1.Motor winding and frame short circuit 2.Motor and ground short circuit 3.Power module is damaged	1.Check the motor 2.Check the wiring 3.Replace the power module
OCD	Over-current at deceleration	The preset deceleration time is too short	Set a longer deceleration time
OCA	Over-current at acceleration	1. Acceleration time is too short 2. The capacity of the motor is higher than the capacity of the inverter 3.Short circuit between the motor winding and frame. 4.Short circuit between motor wiring and earth 5. IGBT module is damaged	1. Set a longer acceleration time 2. Replace the inverter with the same or greater capacity as that of the motor 3. Check the motor 4. Check the wiring 5. Replace the IGBT module
OCC	Over-current during run	1. Transient load change 2. Transient power change	Increase inverter capacity
OVC	Over voltage during operation/ deceleration	1. Deceleration time setting is too short or excessive load inertia 2. Power voltage varies widely	1. Set a longer deceleration time 2. Add a braking resistor or braking unit 3. Add a reactor at the input line side 4. Increase inverter capacity
OHC	High heat sink temperature during operation	1. Heavy load 2. Ambient temperature too high or bad ventilation	1. Check if there are any problems with the load 2. Increase inverter capacity 3. Improve ventilation conditions 4. Inspect the setting value of parameter C13

3. Errors which can only be recovered manually (no auto-restart)

Display	Error	Cause	Corrective Action
OC	Over-current during stop	1. OC Detection circuit malfunction 2. Bad connection for CT signal cable	Send the inverter back for repair
OL1	Motor overload	1. Heavy load 2. Improper settings of F43	1. Increase motor capacity 2. Set F43 correctly according to motor nameplate.
OL2	Inverter overload	Excessively Heavy load	Increase inverter capacity
LVC	Under voltage during operation	1. Power voltage too low 2. Power voltage varies widely	1. Improve power quality. 2. Set a longer acceleration time 3. Add a reactor at the power input side 4. Contact technical support

Note: "@" means when the inverter fails, the failure contact does not activate.

3.1.2 Set up Configuration, Interface Errors.

Display	Error	Description
SP0	Zero speed stop	Set frequency is <0.1Hz Increase set frequency
SP1	Fail to start directly	1. If the inverter is set to external control mode (F04=001), and direct start is disabled (C09=001), the inverter cannot be started and will flash STP1 when the Run switch is ON when applying power (see descriptions of C09). 2. Direct start is possible when C09=000.
SP2	Keypad emergency stop	1. If the inverter is set to external control mode (F04=001), the inverter will stop according to the setting of F9 when the stop key is pressed. STP2 flashes after stop. Turn the Run switch to OFF and then ON again to restart the inverter. 2. If the inverter is in communication mode and Stop key is enabled, the inverter will stop in the way set by F9 when Stop key is pressed during operation and then flashes STP2. The PC has to send a Stop command then a Run command to the inverter for it to be restarted.
E.S.	External emergency stop	The inverter will decelerate to stop and flashes E.S. when there is an external emergency stop signal via the multi-function input terminals(see descriptions of F11~F14).
b.b.	External base block	The inverter stops immediately and then flashes b.b. when external base block is input through the multi-functional input terminal (see descriptions of F11~F14).
PID	PID feedback signal loss	PID feedback signal circuit error detection
———	REMOTE KEYPAD cable broken	1. When REMOTE KEYPAD does not connect with inverter, this signal will be displayed on the Remote keypad. 2. When REMOTE KEYPAD connects with inverter, this signal will be displayed on the main keypad. 3. When both REMOTE KEYPAD and main KEYPAD display this signal means communication errors.

3.1.3 Keypad operation error description

Display	Error	Cause	Corrective Action
Er1	Key operation error	1. Attempt to Press▲ or ▼ keys when F05> 0 or in speed operation. 2. Attempt to modify parameters, which can not be modified during Run (see parameter list).	1. ▲ or ▼ keys can be used to modify frequencies only when F05=0. 2. Modify parameters only in stop mode.
Er2	Parameter setting error	1. F07 is within ranges of C27±C29or C28±C29 2. F07<F08 or F07=F08	1. Modify F32~F33 2. 3-00>3-01
Er5	Modification of parameter is not allowed during communication	1.Issue a control command during communication disabled 2. Modify C49~C53 during communication.	1. Issue the enabling command before while communicating. 2. Set up parameters before communicating.
Er6	Communication failure	1. Incorrect wiring. 2. Incorrect settings of communication parameters. 3. Check-sum error. 4. Incorrect communication verification.	1. Check the hardware and wiring. 2. Check C49~C53
Er7	Incorrect parameter settings	1. Attempt to modify F00 2. Voltage and current detection circuits are malfunctioning.	Reset inverter or contact technical support
EP1	Parameter set error, Copy Unit failure	1. Set C48=1.2, can not connect with Copy Unit. 2. Copy Unit failure. 3. The voltage and drive rating on Copy Unit & the inverter are different.	1.Modify C48 2.Change Copy Unit 3.Copy from keypad to inverter with only matched HP ratings
EP2	Parameters do not match	Copy the parameter to inverter to verify the parameter not matched.	1. Change Copy Unit 2. The voltage and HP rating of Copy Unit is different than the inverter.

3.2 General functional troubleshooting

Status	Checking point	Corrective Action
Motor does not run	Is power applied to L1, L2, and L3(N) terminals (is the charging indicator lit)?	• Is the power applied? • Turn the power OFF and then ON again. • Make sure the input line voltage is correct. • Make sure all terminal screws are secured firmly.
	Are there voltage outputs on T1, T2, and T3 terminals?	Turn the power OFF and then ON again.
	Is the motor mechanically overloaded?	• Reduce the load to improve performance.
	Are there any problems with the inverter?	See error descriptions to check wiring and correct if necessary.
	Has the forward or reverse run commands been issued?	
	Is there an analog input signal?	• Is analog frequency input signal wiring correct? • Is frequency input voltage correct?
	Is operation mode setting correct?	• Configure operations through the digital panel
Motor rotates in the wrong direction	Are wiring for output terminals T1, T2, and T3 correct?	• Wiring must match U, V, and W terminals of the motor.
	Are wiring for forward and reverse signals correct?	• Check wiring and correct if necessary.
Motor rotates in the wrong direction The motor speed can not vary	Are wiring for output terminals T1, T2, and T3 correct?	• Check wiring and correct if necessary.
	Is the setting of frequency command source correct?	• Check the operation mode setting on the keypad.
	Is the load too large?	• Reduce the applied load.
Motor running at too high or too low speeds.	Is the setting of operation mode correct?	• Confirm the motor's specifications.
	Is the load too large?	• Confirm the gear ratio.
	Are specifications of the motor (poles, voltage…) correct?	• Confirm the highest output frequency.
Motor speed is incorrect or erratic	Is the gear ratio correct?	• Reduce the load.
	Is the setting of the highest output frequency correct?	• Minimize the variation of the load. • Increase capacities of the inverter and the motor.
	Is the load too large?	□ Add an AC reactor at the power input side if using single-phase power. □ Check wiring if using three-phase power.